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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/578,714 | 06/11/2007 | Hiroynki Ishida | 1343.46160X00 | 3399 |
| 20457 7590 10/16/2009 ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873 | | | | |
| EXAMINER PAK, HANNAH J | | | | |
| ART UNIT 1796 | | PAPER NUMBER | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/578,714

Applicant(s)

ISHIDA ET AL.

Examiner

Hannah Pak

Art Unit

1796

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 6, 8, 14 and 21-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-6, 8, 14, and 21-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date 07/22/2009.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application.
- 6) ☐ Other: _____.

DETAILED ACTION

1. All outstanding rejections, except for those maintained below, are withdrawn in light of applicants' amendment/remarks filed on 07/22/2009.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.
3. The new grounds of rejection set forth below are necessitated by applicants' amendment filed on 07/22/2009. The applicants have added new claim limitations, claims 21-33, which are supported by paragraphs 1, 9, and 13 of the present specification. In particular, while claims 21-23 correspond to claims 2, 3, and 5, respectively, new claim limitations, claims 28 and 33, regarding the thickness of the speaker diaphragm, are presented for the first time. Thus, the following action is properly made final.
4. It is noted that PTO 892 is being supplied since the examiner inadvertently forgot to include Ishida (US 2006/025950) in the PTO 892 attached to the preceding office action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 5-6, 8, 14, and 21-33 are rejected under 35 U.S.C. 103(a) as being obvious over either Uryu et al. (US 5,274,199) or Johnston et al. (US 4,518,642) in view of Ishida et al. (WO 2004/054315 with a publication date of 06/24/2004, relied on US 2006/025950 for English equivalent).

The rejection is adequately set forth in Pages 2-4 of Office action mailed on 04/22/2009 and is incorporated here by reference.

As to claims 28 and 33, Uryu et al. or Johnson et al. do not mention the thickness of their speaker diaphragm. However, Ishida et al. disclose employing an effective amount of mixing material to obtain a desired thickness of the speaker diaphragm (Paragraphs 10 and 19). Since the amount of the mixing material affects the thickness of the speaker diaphragm, the mixing material is the results-effective variable. Thus, the determination of the optimum or workable amount of mixing material to obtain the desired thickness of the speaker diaphragm is well within the skill of one ordinary in the art, *see MPEP* § 2144.05, *IIB*.

Response to Arguments

6. The applicants' arguments filed 07/22/2009 are fully considered but are not found persuasive. Specifically, the applicants argue that **(A)** all the references cited do not disclose the speaker diaphragm of the present invention (see Page 6 of the Applicant's Remarks). The applicants also argue that **(B)** Uryu et al. does not disclose the particle size for the micro-fibrillate cellulose (see Page 7 of the Applicant's Remarks). Nor is there any disclosure in Uryu et al. that the cellulose material should be subjected to an

esterification surface treatment using an anhydride of a polybasic acid to enhance its infinity to a non-chlorinated synthetic resin (see Page 7 of the Applicant's Remarks).

With respect to argument **(A)**, as mentioned in the previous action, Uryu et al. disclose an acoustic diaphragm made of polyester polymer and micro-fibrillated cellulose (Col. 2, lines 29-42). Alternatively Johnston et al. teach a speaker diaphragm made of polypropylene (polyolefin) polymer and micro-sized cellulose fibers (Col. 2, lines 4-20).

With respect to argument **(B)**, while Uryu et al. do not mention the specific particle size and surface treatment, Ishida et al. disclose using a material made of a mixture of a non-chlorinated resin and a cellulose powder, wherein the powder consists of particles whose diameters are included in a range from about 5 μm to 500 μm (Paragraph 6). The non-chlorinated resin may include polyolefin resins (polypropylene), polystyrene resins, and polyester resins (Paragraph 7). Ishida et al. also disclose the surface treatment for cellulose powder necessitated here into improves its affinity to resins may for example be esterification, that will be done using a polybasic acid anhydride (Paragraph 8). A small amount of organic peroxide will further raise the affinity of esterified cellulose powder for synthetic resins (Paragraph 8). Ishida et al. further disclose the resulting mixed material improves acoustic performance (Paragraph 5). Thus, it would have been obvious to one of ordinary skill in the art to use the material taught by Ishida et al. as the material used to make the diaphragm of Uryu et al. or Johnston et al. to obtain desired acoustic properties.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hannah Pak whose telephone number is (571) 270-5456. The examiner can normally be reached on Monday - alternating Fridays (7:30 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hannah Pak
Examiner
Art Unit 1796

/HP/

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796